AES Water Architecture Study Interim Results

Miriam J. Sargusingh[1]
NASA Johnson Space Center, Houston, TX, 77058

The mission of the Advanced Exploration System (AES) Water Recovery Project (WRP) is to develop advanced water recovery systems in order to enable NASA human exploration missions beyond low earth orbit (LEO). The primary objective of the AES WRP is to develop water recovery technologies critical to near term missions beyond LEO. The secondary objective is to continue to advance mid-readiness level technologies to support future NASA missions. An effort is being undertaken to establish the architecture for the AES Water Recovery System (WRS) that meets both near and long term objectives. The resultant architecture will be used to guide future technical planning, establish a baseline development roadmap for technology infusion, and establish baseline assumptions for integrated ground and on-orbit environmental control and life support systems (ECLSS) definition. This study is being performed in three phases. Phase I of this study established the scope of the study through definition of the mission requirements and constraints, as well as indentifying all possible WRS configurations that meet the mission requirements. Phase II of this study focused on the near term space exploration objectives by establishing an ISS-derived reference schematic for long-duration (>180 day) in-space habitation. Phase III will focus on the long term space exploration objectives, trading the viable WRS configurations identified in Phase I to identify the ideal exploration WRS. The results of Phases I and II are discussed in this paper.

[1] Systems Engineer, Crew and Thermal Systems Division, 2101 NASA Parkway/EC2